ISSN (print) 0093-4666 © 2010. Mycotaxon, Ltd. ISSN (online) 2154-8889

MYCOTAXON

DOI: 10.5248/114.61

Volume 114, pp. 61–65 *October–December 2010*

A new species of *Entoloma* from Western Ghats of India

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Abstract — A new species, *Entoloma vittalii* (sect. *Cyanula,* subg. *Leptonia, Entolomataceae*), collected from paleotropical regions of the Uppangala forest, Western Ghats, Karnataka, is described and illustrated. Macro- and microscopic differences and similarities are compared with closely related taxa.

Key words — *Agaricales, Basidiomycota,* fungal taxonomy, macrofungi

Introduction

Species of *Entoloma,* one of the largest genera in the *Agaricales,* are distributed throughout the world. In India, Pegler (1977) revised descriptions of *Entolomataceae* species, and Horak (1980) also treated several entolomatoid taxa. Manimohan et al. (1995, 2002, 2006) contributed the most notable records, describing 39 *Entoloma* species from Kerala state alone. As a result, a total of 69 entolomatoid species have been described from different regions in India (Manjula 1983, Natarajan et al. 2005). During our studies on diversity of macrofungi from Western Ghats of Karnataka, we collected several *Entoloma* species, of which six represented first records for India (Senthilarasu & Natarajan 2003). One species, which differs macro- and microscopically from known allied species, is described below as new to science.

Materials and methods

The collections described here are from paleotropical regions of the Uppangala forest, Western Ghats, Karnataka, India. Sections were prepared by hand, revived

in 10% KOH and examined in 2% phloxine. Approximately 50 basidiospores obtained from spore prints were measured. Mean spore measurements (in parentheses) are followed by spore size range, with extreme values in parentheses. Colour terminologies follow Kornerup & Wanscher (1978). The examined type specimens are deposited at Herbarium of Madras University Botany Laboratory (MUBL).

Entoloma vittalii Senthil., Kumaresan & S.K. Singh, **sp. nov.** PLATE 1

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Pileus 35–45 mm latus, plano-convexus, umbonatus, acutus ad discum rubrobrunneus, ad marginem fuscus, laevis, glaber; margine laevis, erosus, lucido-striatus. Lamellae emarginatae, cremeus, pallescens aurantiacus, confertae, latissimae, cum tribus ordinibus lamellularum intermixtae. Stipes 40–55 × 6–10 mm, cylindricus vel expansus, cavus, ad apicem lilacinus, ad basim lilacinus griseus, laevis, glaber. Caro tenuissima, albida, 3 mm latus. Sporae (8.9 ± 0.6 × 6.1 ± 0.4), (7–)7.5–10(–10.5) × 5.5–7(–7.5) µm, Q = 1.45, heterodiametrico-ellipsoidea, angulatae. Basidia 24–34 × 7.5–9.5 µm, clavata, 4 sporigera. Acies lamellarum fertilis. Cystidia nulla. Trama hymenophoralis regularis, hyalina. Epicutis ex hyphis cylindricus, 1.5–12 µm latus. Hyphae omnes defibulatae.

HOLOTYPE: India, Karnataka State, Western Ghats, Manadukka, Uppangala Forest, 12°30'N 79°30'W, 500 masl, on ground (soil), Senthilarasu G. (MUBL 3496).

ETYMOLOGY: This species is named in honor of Prof. B.P.R. Vittal of the Centre for Advanced Studies in Botany, University of Madras, India.

Pileus 35–45 mm diam., plano-convex, becoming uplifted, acutely umbonate; surface reddish brown (8F8) at the center, paler (8D4) towards margin, smooth, glabrous; margin smooth, eroded, pellucid striate. Lamellae emarginate, cream, becoming pale orange (5A3), crowded, moderately broad with lamellulae of three lengths. Stipe 40–55 × 6–10 mm, cylindric to compressed, hollow; surface violet white (15A2) at the apex, lilac grey (15B2) below, smooth, glabrous, arising from white, rhizomorphs. Context thin, whitish, up to 3 mm thick.

Basidiospores (8.9 ± 0.6 × 6.1 ± 0.4), (7–)7.5–10(–10.5) × 5.5–7(–7.5) µm, Q = 1.45, heterodiametric-elliptic, with well marked angles, with 5–7 occasionally 8 plane to few concave facets visible in profile, with a thickened stramineous wall, containing a single, large refractive guttule. Basidia 24–34 × 7.5–9.5 µm, clavate, bearing four sterigmata, up to 5.5 µm long. Lamella-edge fertile. Cystidia absent. Hymenophoral trama regular, with hyaline, thin-walled hyphae, 1.5–11.5 µm diam. inflated to 17 µm diam. Subhymenial layer poorly developed, up to 6 µm wide, interwoven. Pileal surface a repent epicutis of radially arranged parallel hyphae, 1.5–12 µm diam. Pileal context consisting of tightly interwoven, thin-walled, hyaline hyphae, 1.5–17.5 µm diam., inflated to 37.5 µm diam. All hyphae lacking clamp-connections.

HABITAT - On ground, solitary, scattered in wet evergreen forest.

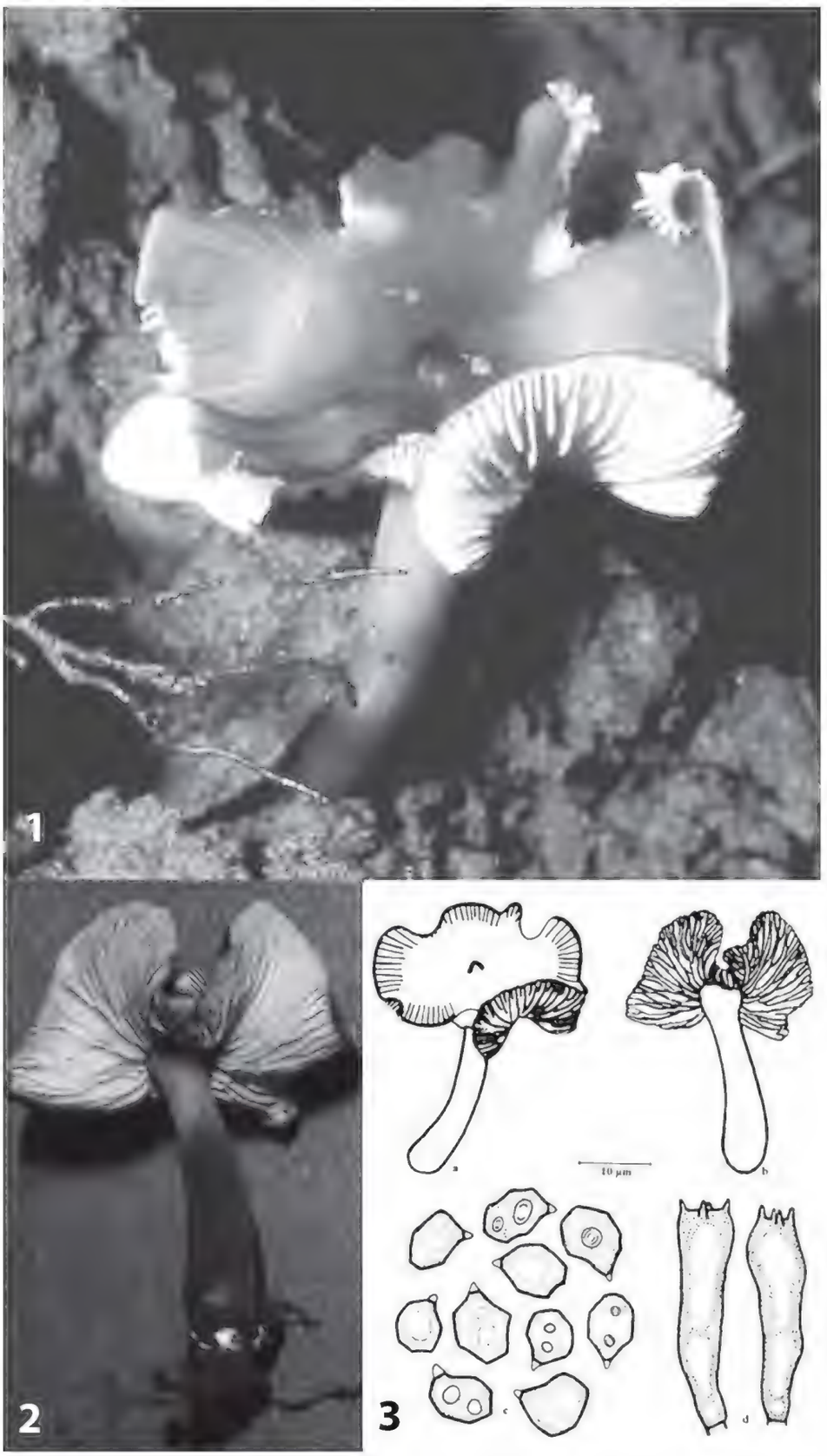

PLATE 1. *Entoloma vittalii*: 1–2—In situ, Uppangala forest (Photo G. Senthilarasu): 1. Habit. 2. Gill view. 3—Line drawings (a–b. ×1; c–d, bar = 10 µm): a. Habit. b. Gill view. c. Basidiospores. d. Basidia.

Discussion—The characteristic features of *Entoloma vittalii* are the plano-convex to uplifted and acutely umbonate, reddish brown, smooth pileus, violet white to lilac grey stipe, heterodiametric-elliptic spores, and absence of cystidia. Species with uplifted, acutely umbonate reddish brown pilei with violet white to lilac grey stipes are uncommon, and very few species have been reported in the literature. *Entoloma vittalii* seems to fit best in subg. *Leptonia*, sect. *Cyanula* (Noordeloos 1992) based on collybioid habit, violaceous stipe, heterodiametric basidiospores, and lack of cheilocystidia and clamp connections. However, the umbonate, glabrous pileus is somewhat out of place for this subgenus and section, which are typically defined by an umbilicate, squamulose pileus surface. It is not clear at this time where *E. vittalii* belongs in the genus as recognized by Noordeloos (1992).

Entoloma vittalii resembles *E. parvum* (Peck) Hesler (Hesler 1967) in similarly sized basidiomes, heterodiametric elliptic spores, and absence of cystidia. However, its conic-convex, bluish black pileus, adnate lamellae, and bluish black stipe clearly differentiate *E. parvum* from *E. vittalii*.

Entoloma vittalii also closely resembles the paleotropic species *E. maderas-patanum* (Pegler) E. Horak (Horak 1980) in having an umbonate, brown, smooth pileus and lacking cheilocystidia and clamp-connections. However, *E. maderaspatanum* clearly differs in its conic-convex, dark brown pileus, long (8 cm vs 4–5.5 cm) white or cream colored stipe, and somewhat larger spores (9–12.5 µm vs 7–10.5 µm).

Acknowledgments

The authors are grateful to Dr. Timothy J. Baroni, Department of Biological Sciences, PO Box 2000, State University of New York – Cortland College, Cortland, NewYork 13045 and Dr. Michael Noordeloos, Netherlands Centre for Biodiversity Naturalis, section NHN, PO. Box 9514, 2300 RA Leiden, The Netherlands for their valuable comments and careful review of this article. SG wishes to express his sincere thanks to Prof. P. Manimohan, Calicut University, Kerala, India and Dr. Shaun Pennycook for providing the literatures on *Entoloma*. Sincere thanks to Dr. Taiana Riviere and Dr. Dennis Depomier of Institut Francais de Pondichery, Pondicherry, India. We would like to thank the Ministry of Environment and Forests (MoEF), Government of India, New Delhi, for providing financial assistance and Department of Science and Technology (DST), Government of India, New Delhi, for providing financial support under the IRPHA Programme for setting up State-of the- art National Facility for Culture Collection of Fungi (No. SP/SO/PS-55/2005) at Agharkar Research Institute, Pune, India.

Literature cited

Hesler LR. 1967. *Entoloma (Rhodophyllus)* in South East North America. Beih. Nova Hedwigia 23: 1–192.

Horak E. 1980. *Entoloma* (*Agaricales*) in Indomalaya and Australasia. Beihefte zur Nova Hedwigia 65: 1–352.

Kornerup A, Wanscher JH. 1978. Methuen Handbook of Colour. 3rd edn. Methuen and Co., Ltd., London. 243 pp.

Manimohan P, Leelavathy KM, Noordeloos ME. 2002. Three new species of *Entoloma* from Kerala State, India. Persoonia 17: 625–630.

Manimohan P, Noordeloos ME, Dhanya AM. 2006. Studies on the genus *Entoloma* (*Basidiomycetes, Agaricales*) in Kerala State, India. Persoonia 19(1): 45–93.

Manimohan P, Vijaya Joseph A, Leelavathy KM. 1995. The genus *Entoloma* in Kerala State, India. Mycological Research 99(9): 1083–1097. doi:10.1016/S0953-7562(09)80777-6

Manjula B. 1983. A revised list of the agaricoid and boletoid basidiomycetes from India and Nepal. Proceedings of Indian Academy of Sciences (Plant Science) 92: 81–213.

Natarajan K, Kumaresan V, Narayanan K. 2005. A checklist of Indian agarics and boletes (1984–2002). Kavaka 33: 61–128.

Noordeloos ME. 1992. *Entoloma* sl. Fungi Europaei, Saronno, Italia.

Pegler DN. 1977. A revision of *Entolomataceae* (*Agaricales*) from India and Sri Lanka. Kew Bulletin 32: 189–220. doi:10.2307/4117266

Senthilarasu G, Natarajan K. 2003. Additions to the genus *Entoloma* from India. Kavaka 31: 153–159.